Airway Devices Module

Airway Devices

- **This section is intended for additional clarification and pictures of devices.**

Airway Devices

- **It also includes several studies relative to airway device utilization.**

Oropharyngeal Airways

Guedel plastic oropharyngeal airway. Reproduced by courtesy of the *Collection of Anesthesia and Intensive Care Medicine at the Institute for the History of Medicine in Vienna* (Austria).

Ernst Zadrobilek, MD, (Vienna, Austria),

Nasopharyngeal Airways

Wendl red rubber nasopharyngeal airway (see Figures 1 to 4) from the Collection of Anesthesia and Intensive Care Medicine at the Institute for the History of Medicine in Vienna (Austria) Ernst Zadrobilek, MD. (Vienna, Austria)

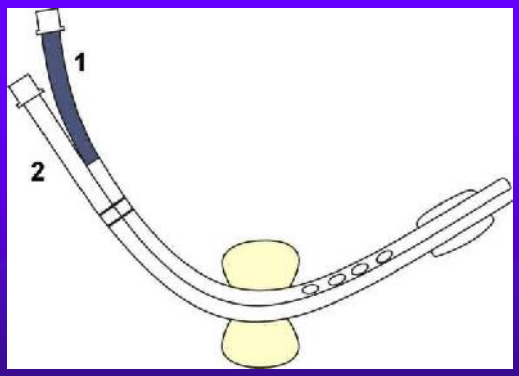
Mounted Suction

Portable Suction

ECT Kit

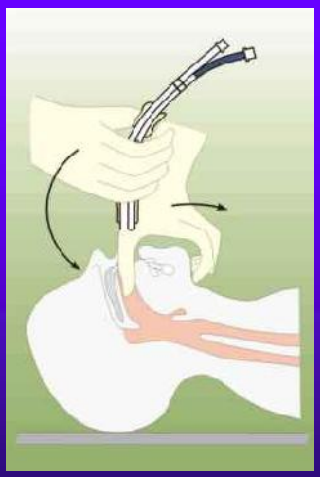
ECT Procedure Outline

1. Cross section:



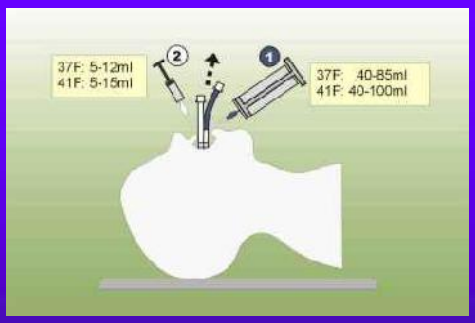
ECT Procedure Outline

2. Insertion:



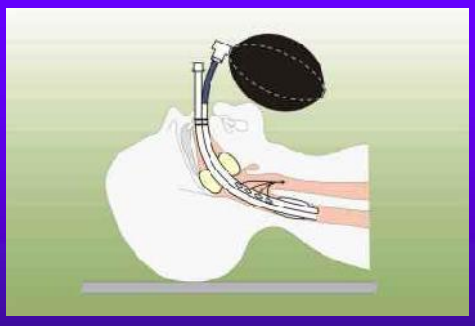
ECT Procedure Outline

3. Inflation of balloon and cuff:



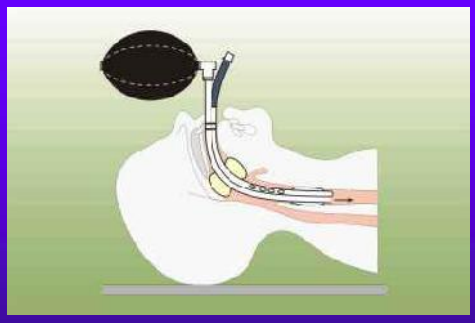
ECT Procedure Outline

4. Esophageal placement and ventilation:



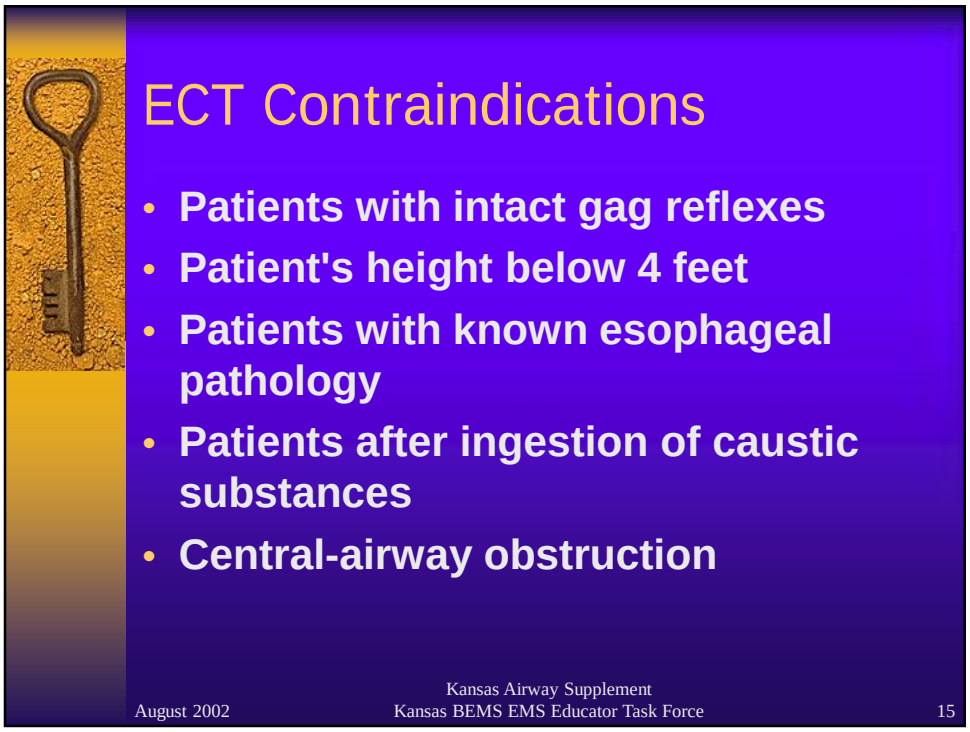
ECT Procedure Outline

5. Tracheal placement and ventilation:



ECT Advantages

- **Non invasive**
  - **Helpful under difficult circumstances with respect to space and illumination**
  - **No preparation necessary**
  - **Blind insertion possible, however use laryngoscope whenever feasible !**
  - **Simultaneous fixation after inflation of oropharyngeal balloon**
  - **Works in tracheal or esophageal position**
  - **Minimized risk of aspiration**
  - **Application of high ventilatory pressures possible**
  - **Independent of power supply**
  - **Optimal method in emergency intubation and in cases of bleeding when visualization of vocal cords is impossible**


ECT Contraindications
• Patients with intact gag reflexes
• Patient's height below 4 feet
• Patients with known esophageal pathology
• Patients after ingestion of caustic substances
• Central-airway obstruction
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Airway Related Research
Selected Studies
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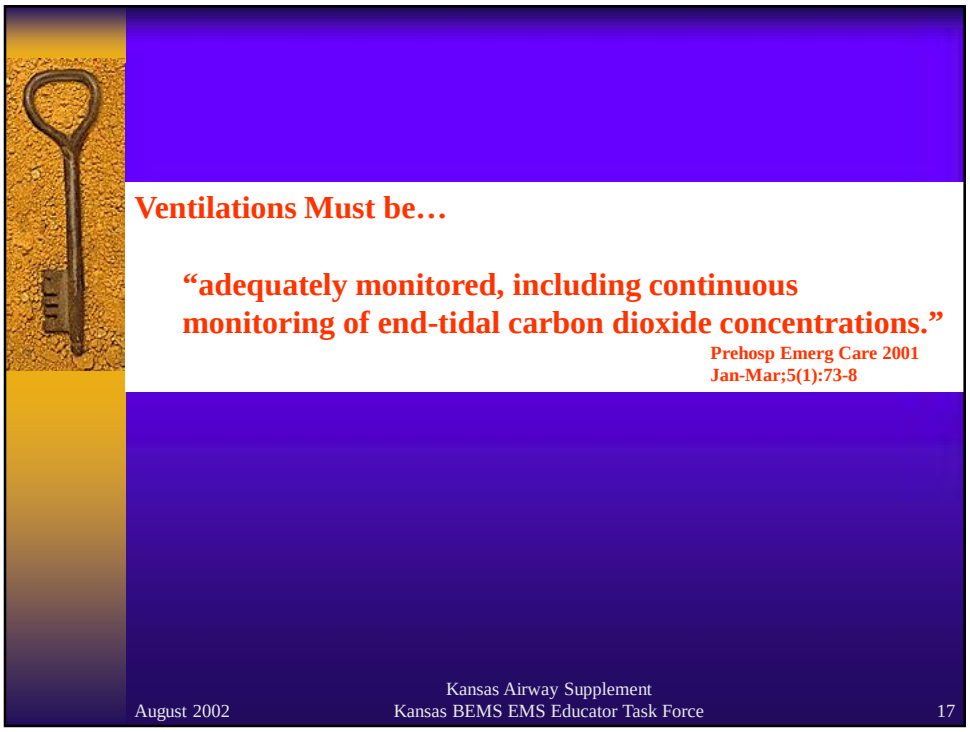
Ventilations Must be…
"adequately monitored, including continuous monitoring of end-tidal carbon dioxide concentrations."
Prehosp Emerg Care 2001 Jan-Mar;5(1):73-8
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Data were recorded by the EMS provider on 167 [corrected] adult patients (age range 16-92 years) in whom a PTL or endotracheal (ET) airway insertion was attempted.
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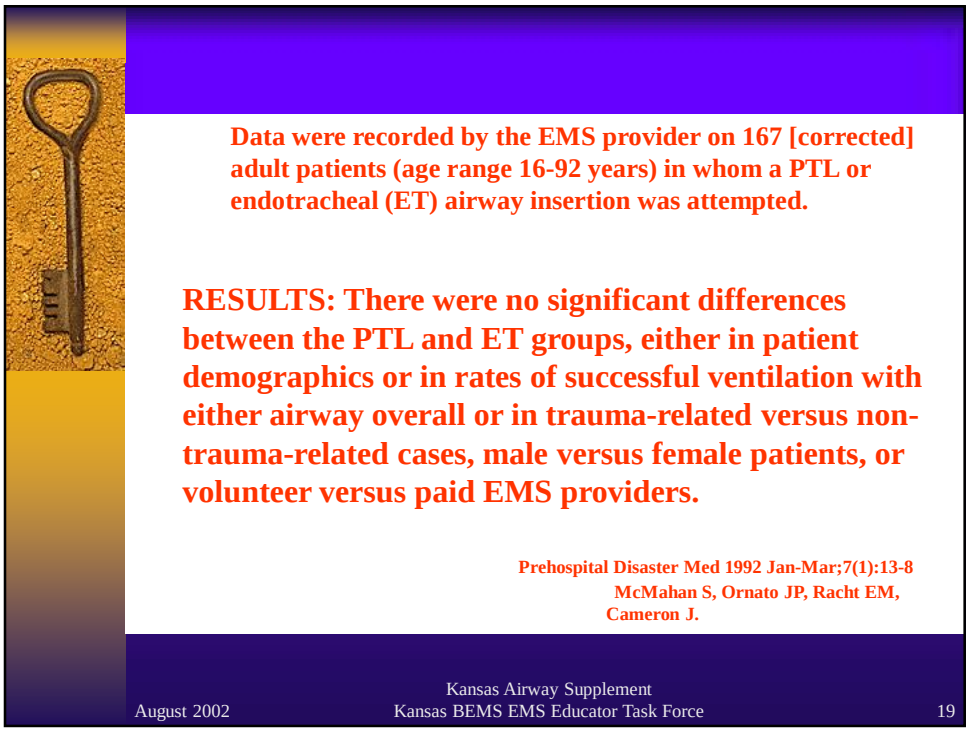
Data were recorded by the EMS provider on 167 [corrected] adult patients (age range 16-92 years) in whom a PTL or endotracheal (ET) airway insertion was attempted.
RESULTS: There were no significant differences between the PTL and ET groups, either in patient demographics or in rates of successful ventilation with either airway overall or in trauma-related versus non-trauma-related cases, male versus female patients, or volunteer versus paid EMS providers.
Prehospital Disaster Med 1992 Jan-Mar;7(1):13-8
McMahan S, Ornato JP, Racht EM, Cameron J.
August 2002
Kansas Airway Supplement
Kansas BEMS EMS Educator Task Force
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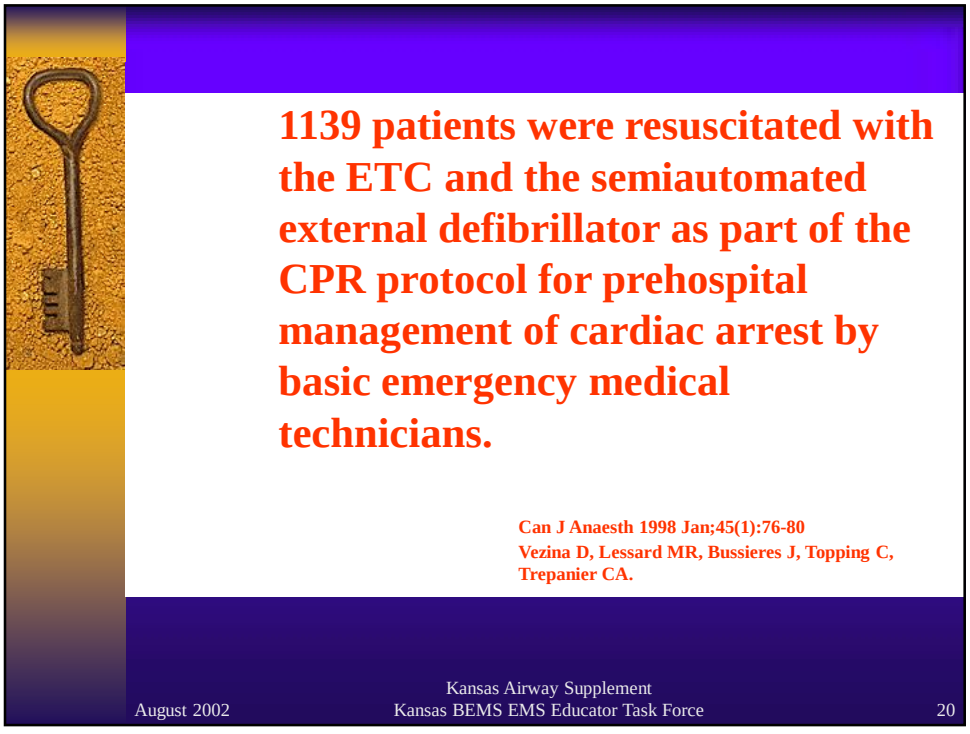
1139 patients were resuscitated with the ETC and the semiautomated external defibrillator as part of the CPR protocol for prehospital management of cardiac arrest by basic emergency medical technicians.
Can J Anaesth 1998 Jan;45(1):76-80
Vezina D, Lessard MR, Bussieres J, Topping C, Trepanier CA.
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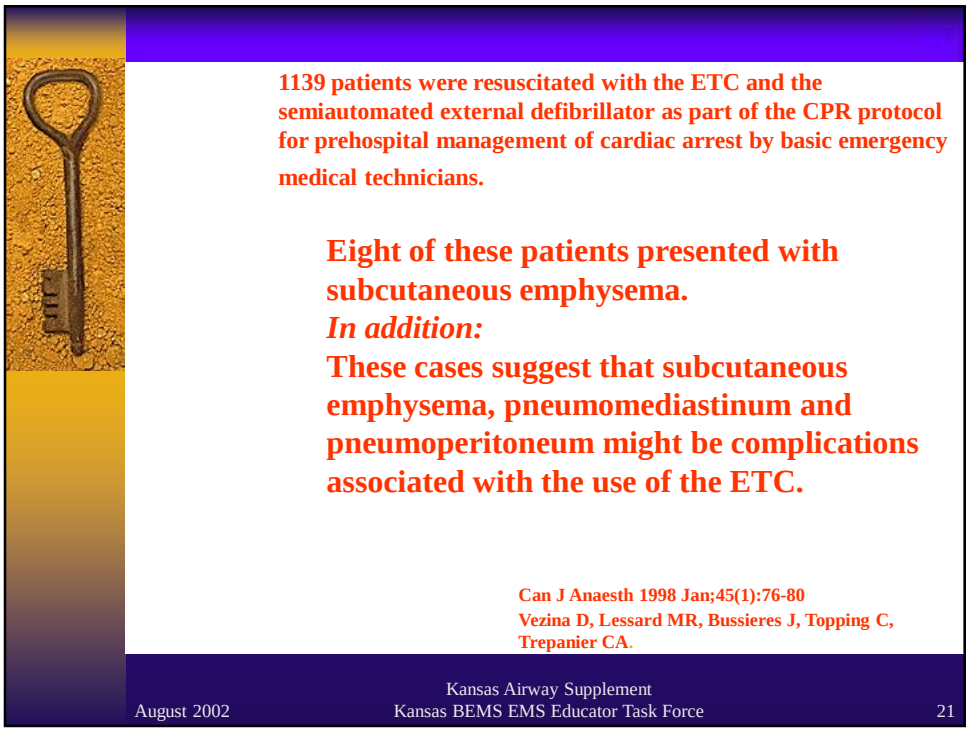
1139 patients were resuscitated with the ETC and the semiautomated external defibrillator as part of the CPR protocol for prehospital management of cardiac arrest by basic emergency medical technicians.
Eight of these patients presented with subcutaneous emphysema.
In addition:
These cases suggest that subcutaneous emphysema, pneumomediastinum and pneumoperitoneum might be complications associated with the use of the ETC.
Can J Anaesth 1998 Jan;45(1):76-80
Vezina D, Lessard MR, Bussieres J, Topping C, Trepanier CA.
August 2002
Kansas Airway Supplement
Kansas BEMS EMS Educator Task Force
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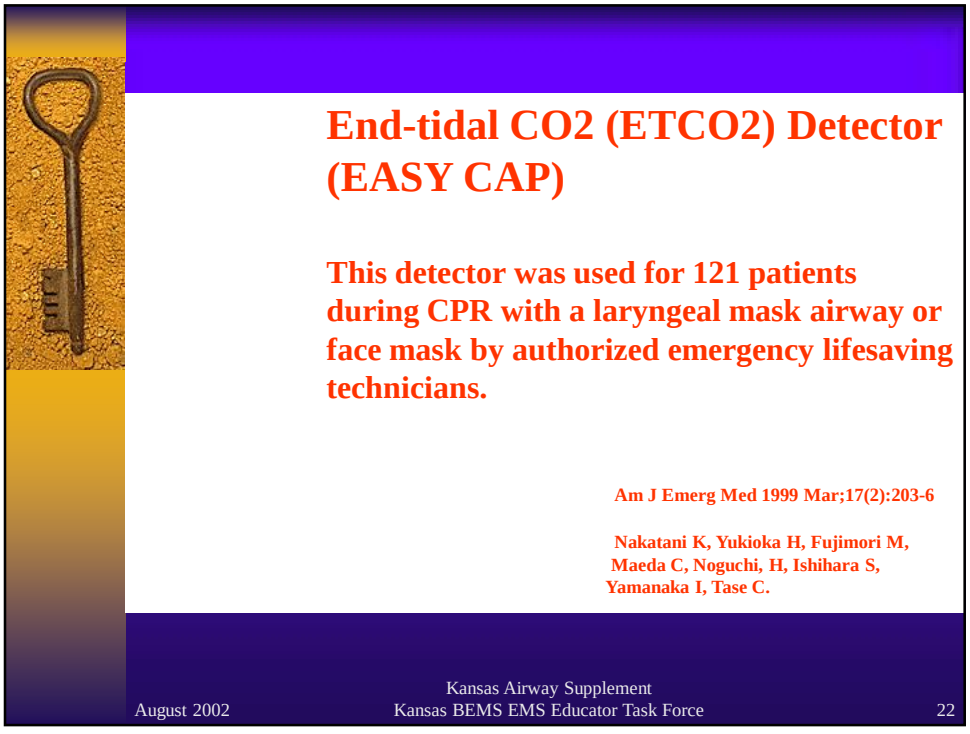
End-tidal CO2 (ETCO2) Detector (EASY CAP)
This detector was used for 121 patients during CPR with a laryngeal mask airway or face mask by authorized emergency lifesaving technicians.
Am J Emerg Med 1999 Mar;17(2):203-6
Nakatani K, Yukioka H, Fujimori M, Maeda C, Noguchi, H, Ishihara S, Yamanaka I, Tase C.
August 2002
Kansas Airway Supplement
Kansas BEMS EMS Educator Task Force
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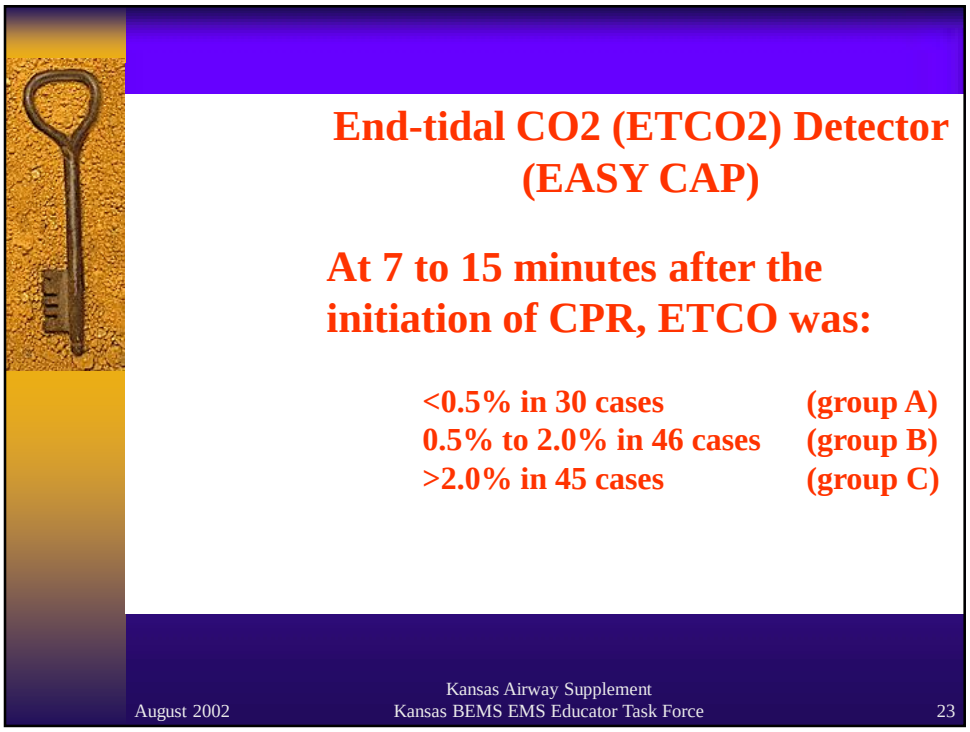
End-tidal CO2 (ETCO2) Detector (EASY CAP)
At 7 to 15 minutes after the initiation of CPR, ETCO was:
<0.5% in 30 cases (group A)
0.5% to 2.0% in 46 cases (group B)
>2.0% in 45 cases (group C)
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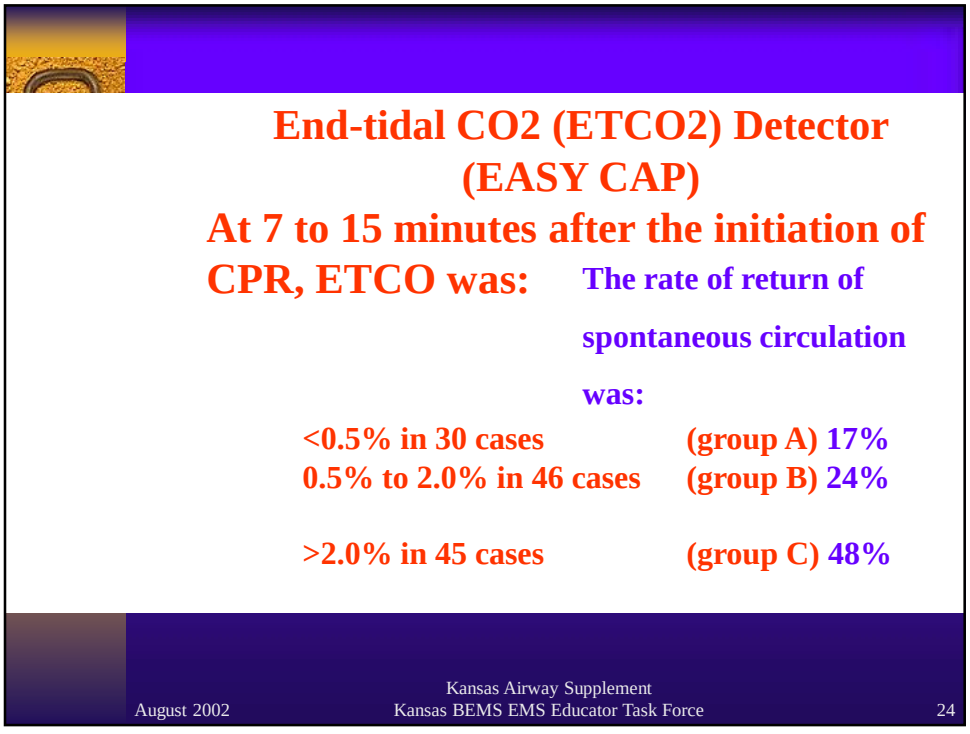
End-tidal CO2 (ETCO2) Detector (EASY CAP)
At 7 to 15 minutes after the initiation of CPR, ETCO was:
The rate of return of spontaneous circulation was:
<0.5% in 30 cases (group A) 17%
0.5% to 2.0% in 46 cases (group B) 24%
>2.0% in 45 cases (group C) 48%
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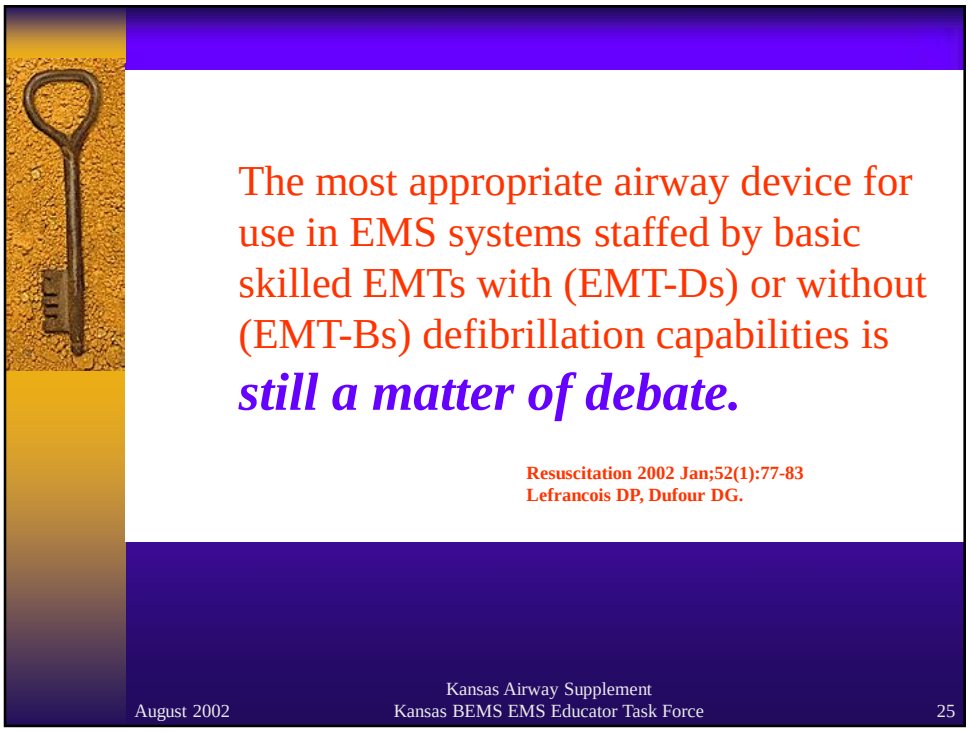
The most appropriate airway device for use in EMS systems staffed by basic skilled EMTs with (EMT-Ds) or without (EMT-Bs) defibrillation capabilities is
still a matter of debate.
Resuscitation 2002 Jan;52(1):77-83
Lefrancois DP, Dufour DG.
August 2002
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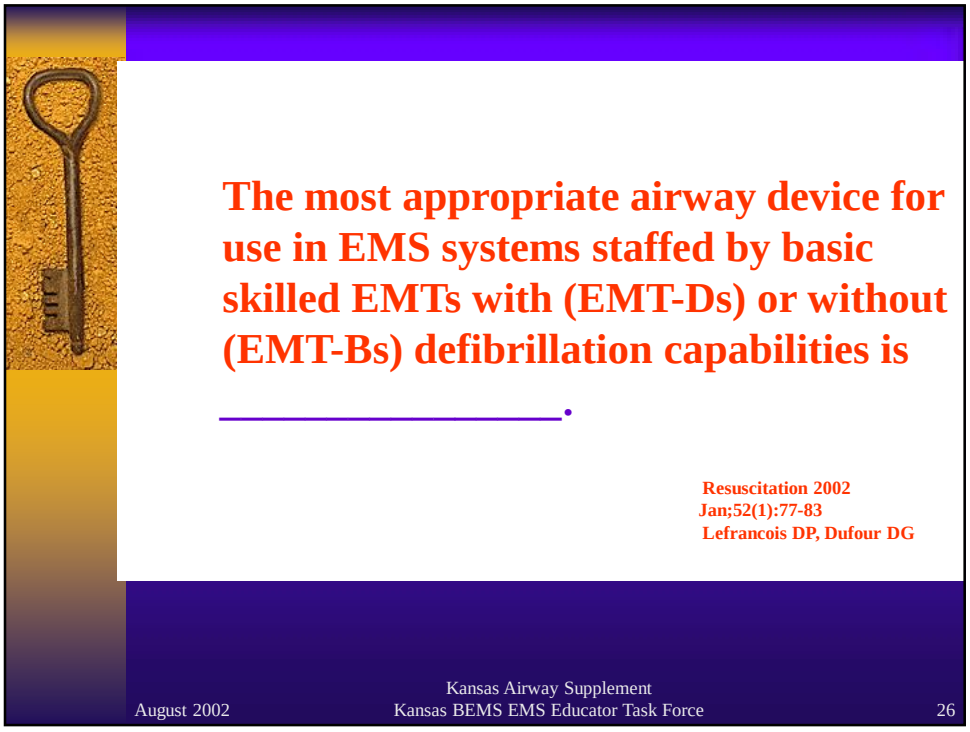
The most appropriate airway device for use in EMS systems staffed by basic skilled EMTs with (EMT-Ds) or without (EMT-Bs) defibrillation capabilities is
_____.
Resuscitation 2002
Jan;52(1):77-83
Lefrancois DP, Dufour DG
August 2002
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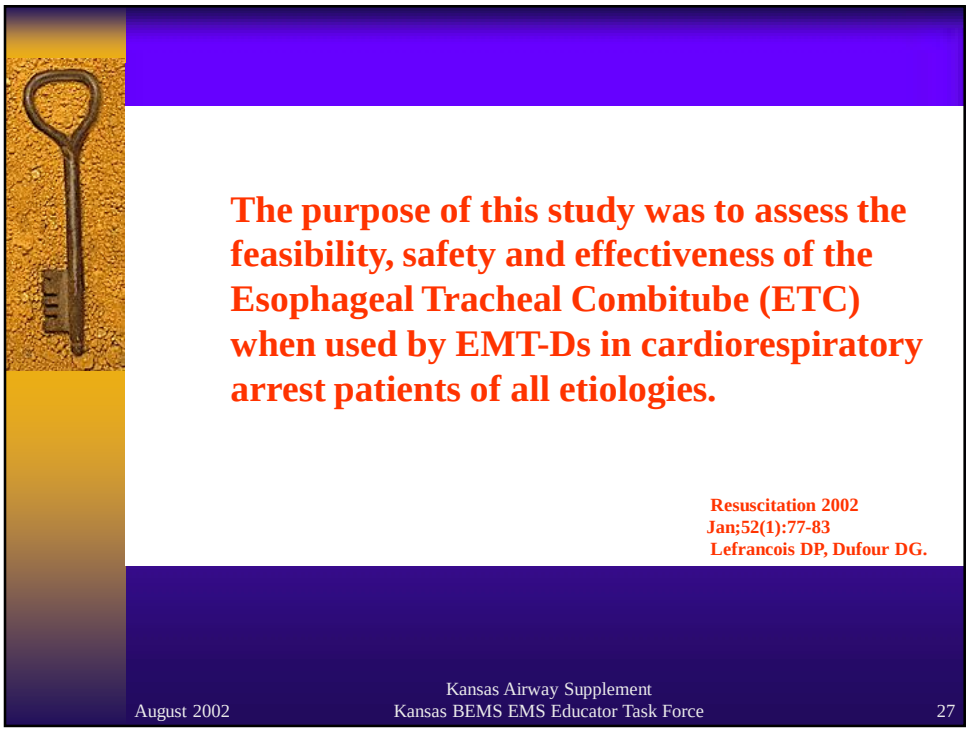
The purpose of this study was to assess the feasibility, safety and effectiveness of the Esophageal Tracheal Combitube (ETC) when used by EMT-Ds in cardiorespiratory arrest patients of all etiologies.
Resuscitation 2002
Jan;52(1):77-83
Lefrancois DP, Dufour DG.
August 2002
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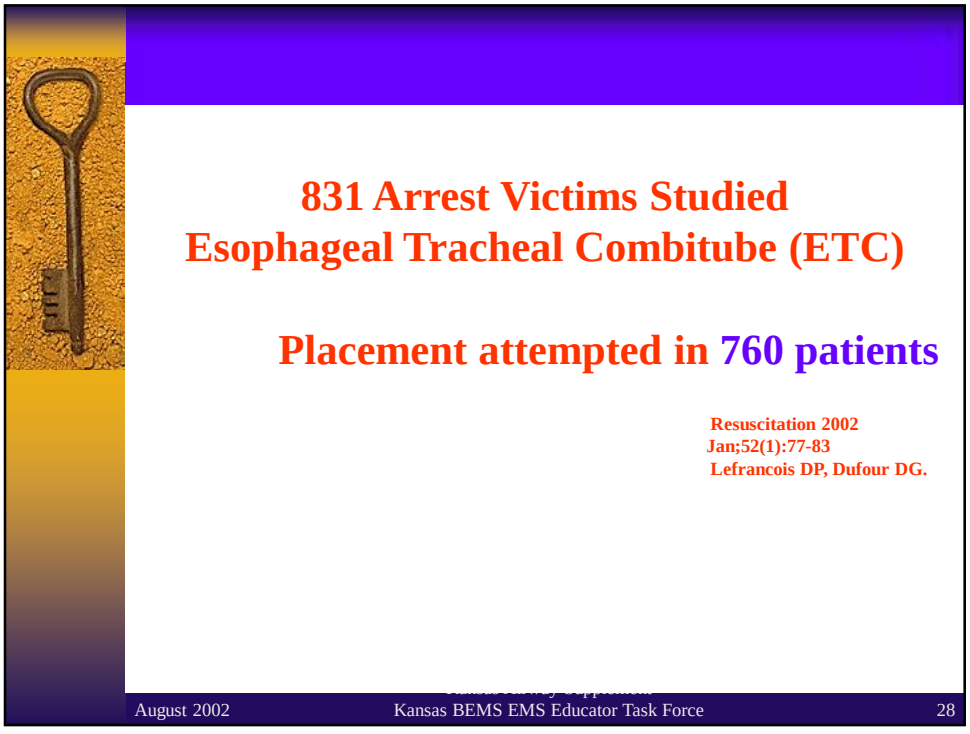
831 Arrest Victims Studied
Esophageal Tracheal Combitube (ETC)
Placement attempted in 760 patients
Resuscitation 2002
Jan;52(1):77-83
Lefrancois DP, Dufour DG.
August 2002
Kansas BEMS EMS Educator Task Force
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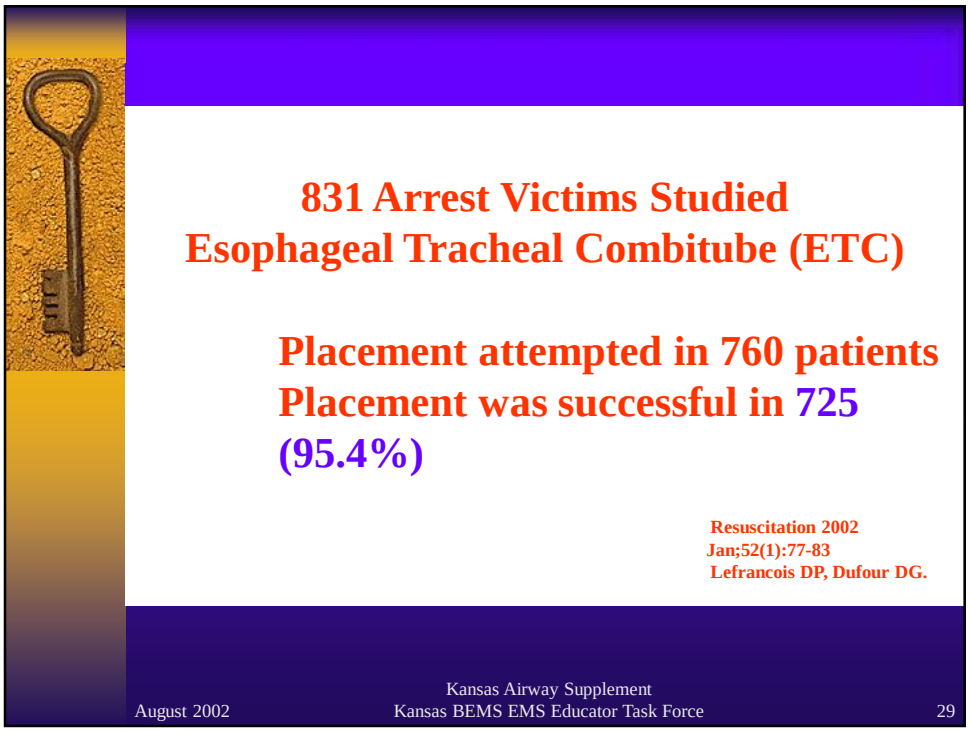
831 Arrest Victims Studied
Esophageal Tracheal Combitube (ETC)
Placement attempted in 760 patients
Placement was successful in 725 (95.4%)
Resuscitation 2002 Jan;52(1):77-83 Lefrancois DP, Dufour DG.
August 2002
Kansas Airway Supplement
Kansas BEMS EMS Educator Task Force
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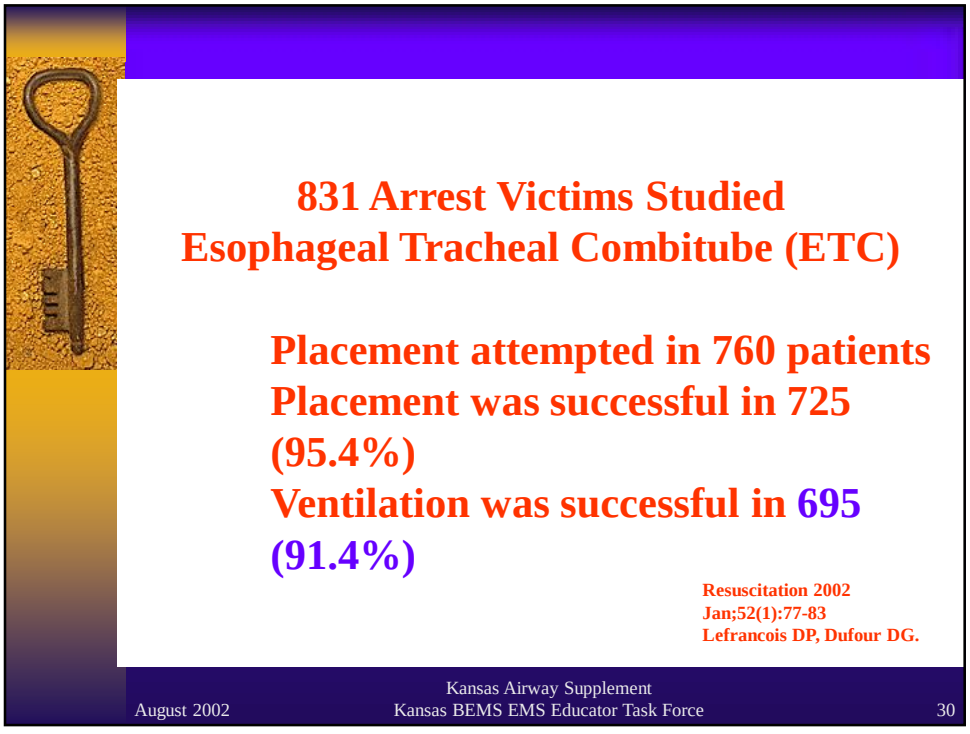
831 Arrest Victims Studied
Esophageal Tracheal Combitube (ETC)
Placement attempted in 760 patients
Placement was successful in 725 (95.4%)
Ventilation was successful in 695 (91.4%)
Resuscitation 2002 Jan;52(1):77-83 Lefrancois DP, Dufour DG.
August 2002
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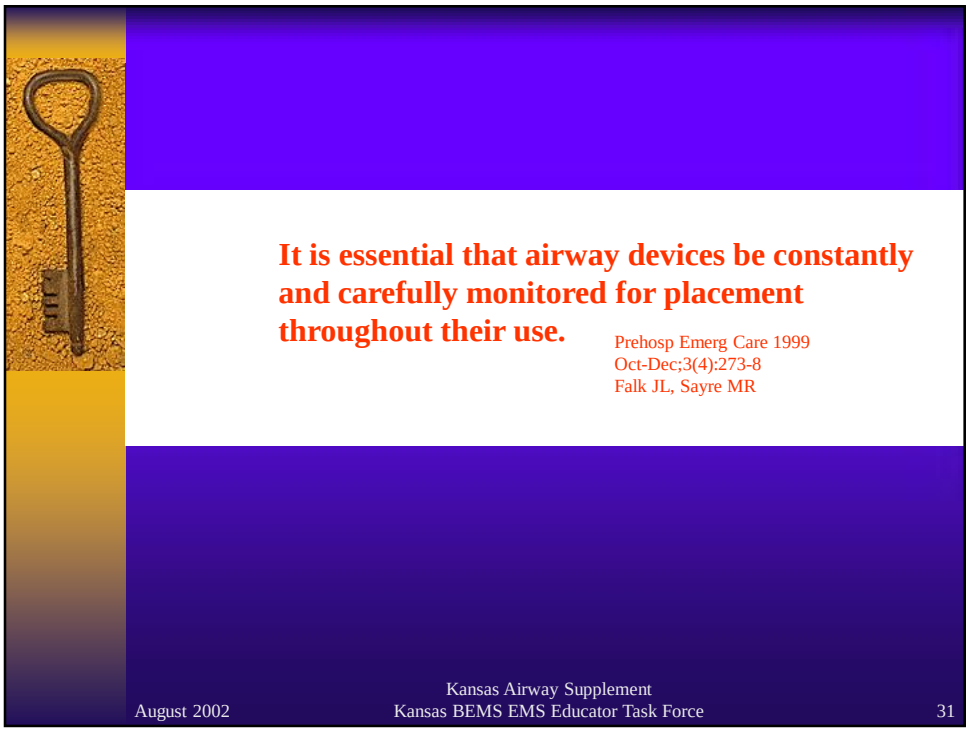
It is essential that airway devices be constantly and carefully monitored for placement throughout their use.
Prehosp Emerg Care 1999 Oct-Dec;3(4):273-8
Falk JL, Sayre MR
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A prospective, controlled study to evaluate the difficulty and complications of insertion, recognition of esophageal versus tracheal placement, skill proficiency, and retention.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
August 2002
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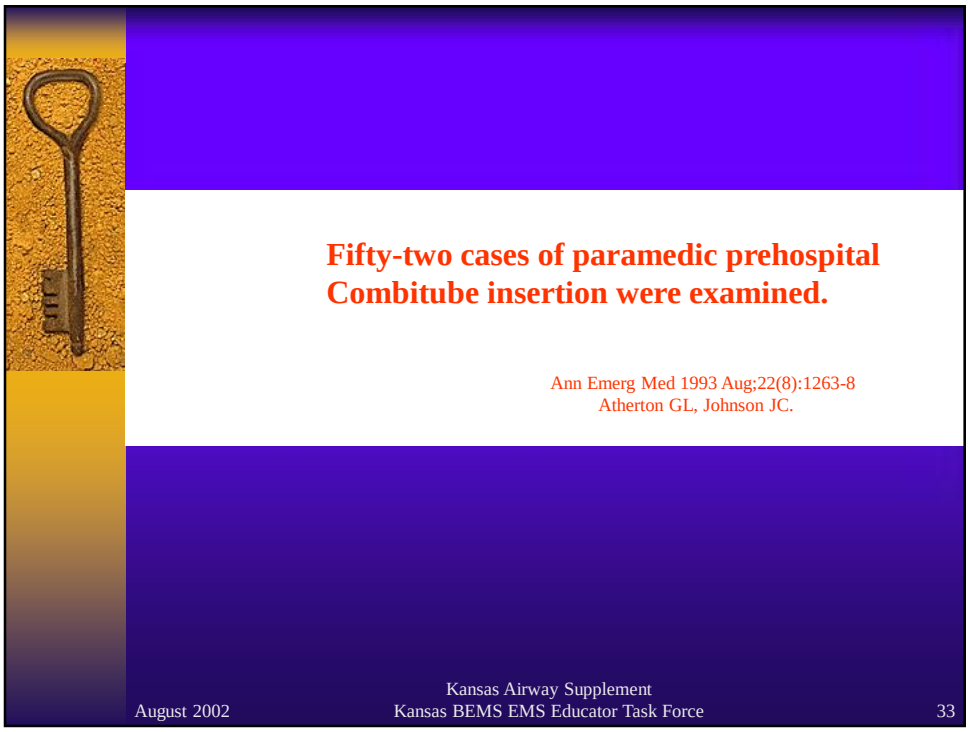
Fifty-two cases of paramedic prehospital Combitube insertion were examined.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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Combitube insertion was attempted on 52 prehospital patients in cardiac arrest
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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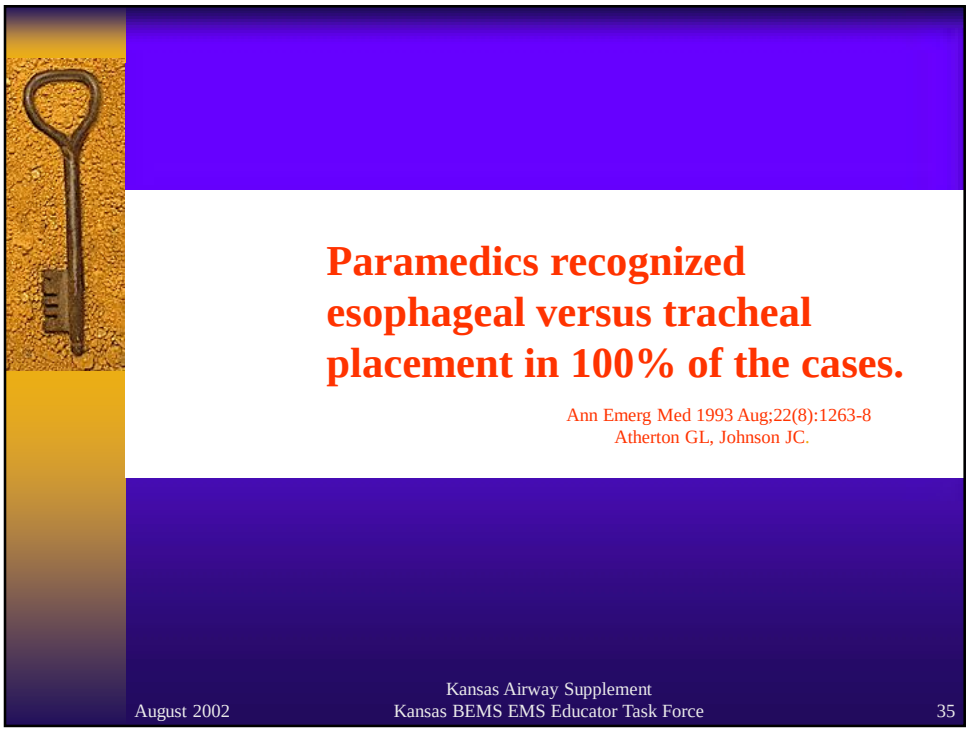
Paramedics recognized esophageal versus tracheal placement in 100% of the cases.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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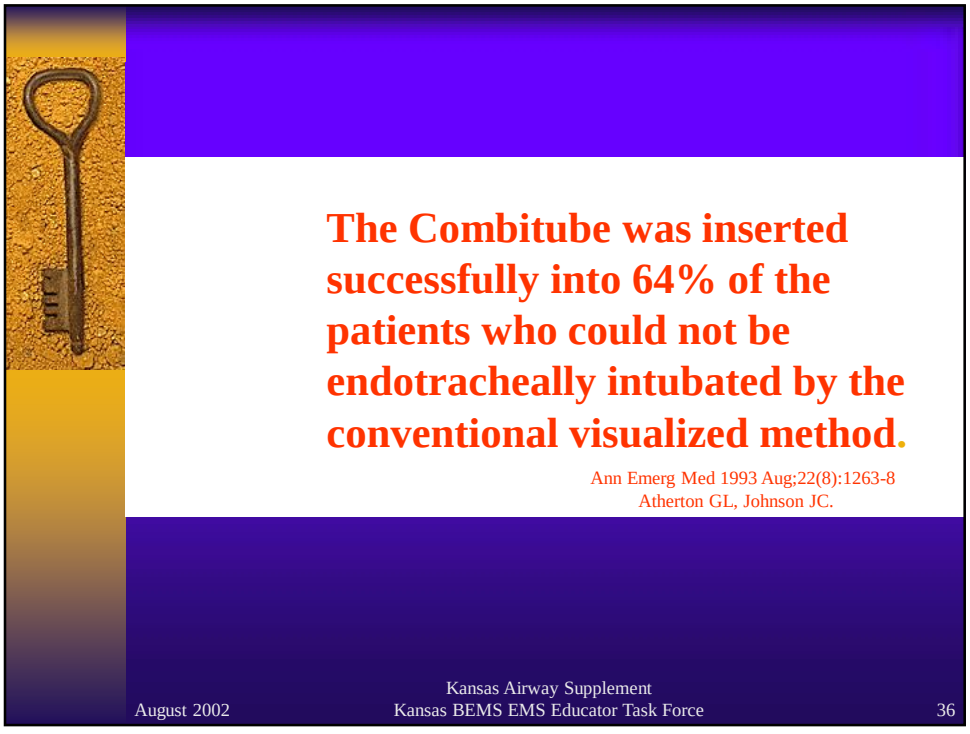
The Combitube was inserted successfully into 64% of the patients who could not be endotracheally intubated by the conventional visualized method.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
August 2002
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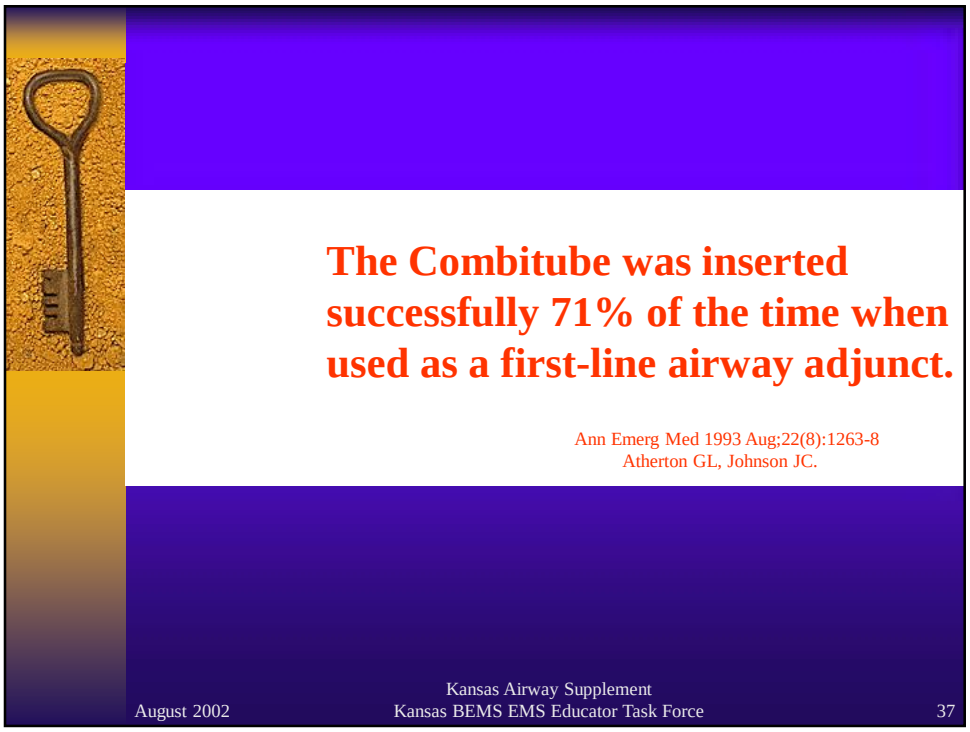
The Combitube was inserted successfully 71% of the time when used as a first-line airway adjunct.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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A follow-up study on 11 randomly selected paramedics involved in the field study was conducted 15 months later.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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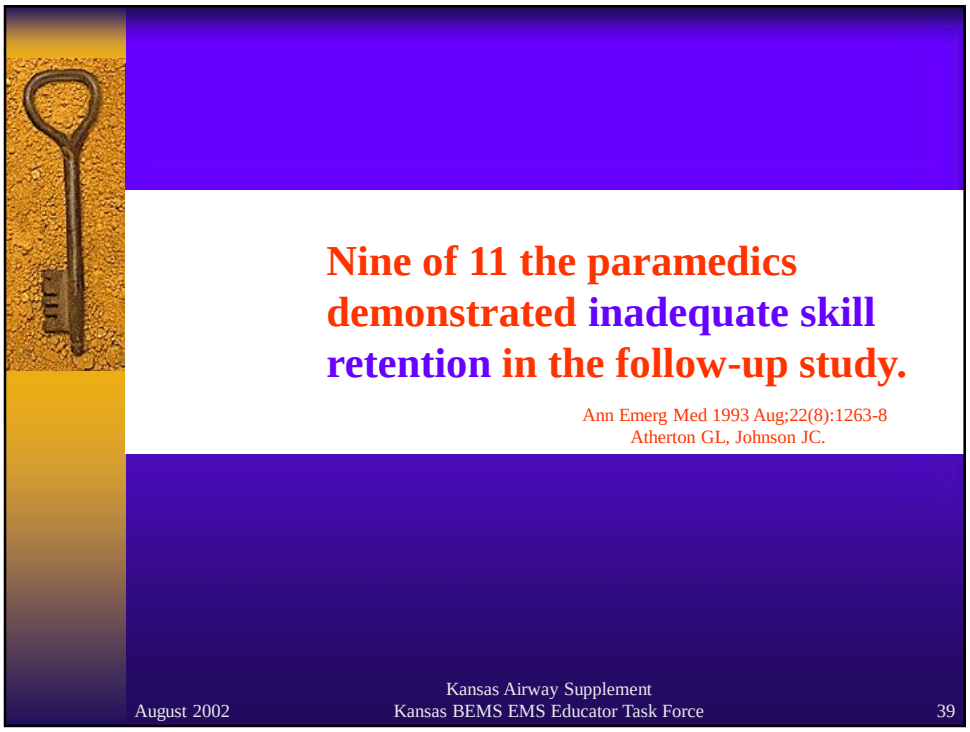
Nine of 11 the paramedics demonstrated inadequate skill retention in the follow-up study.
Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
August 2002
Kansas Airway Supplement
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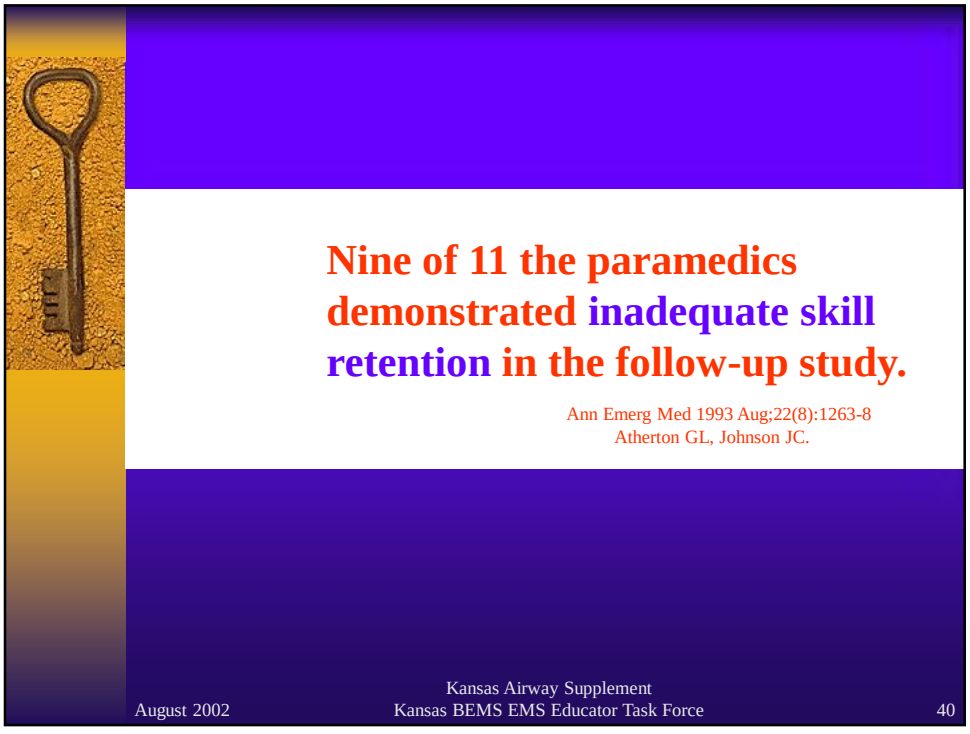
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Ann Emerg Med 1993 Aug;22(8):1263-8
Atherton GL, Johnson JC.
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